



UTILITY OF PH AND WHIFF TEST FOR SCREENING OF ABNORMAL VAGINAL DISCHARGE AMONG WOMEN OF REPRODUCTIVE AGE IN RURAL AREA

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ABSTRACT

Three vaginal infections are frequent causes of vaginal discharge: (1) bacterial vaginosis, (2) vulvovaginal candidiasis, and (3) Trichomoniasis. Simple tool like pH and Whiff test can be carried out without any expertise. This study was carried out to evaluate sensitivity and specificity of pH test and Whiff test individually and in combination in diagnosis of abnormal vaginal discharge, considering microscopy as gold standard.

Material and methods: This prospective observational cross sectional study includes 189 women of reproductive age group with vaginal discharge attending OBGY clinic from September 2010 to May 2012. Both pregnant and non-pregnant women were included in the study with chief complaint of vaginal discharge. Vaginal discharge were collected for determining pH, to perform Whiff test and for Gram staining and microscopy.

Results: Of 189 women 86 (45.5%) were diagnosed to have bacterial vaginosis by applying Nugent's criteria as a gold standard. Vulvovaginal candidiasis and Trichomoniasis was found in 61(32.27%) and 24(12.69%) respectively. The pH ≥ 4.5 was recorded in 136 (71.95%) and Whiff test positive in 120 (63.49%) of women with abnormal vaginal discharge.

Conclusion: Simple tools like pH test and Whiff test can be used as a reliable test for determining abnormal vaginal discharge.

Key Words: Abnormal vaginal discharge, pH test, Whiff test

INTRODUCTION

Vaginitis is a common medical problem in women that is associated with substantial discomfort and frequent medical visits. Vaginal discharge is an extremely distressful condition for women, which can result from a variety of pathological conditions. Three vaginal infections are frequent cause of vaginal discharge: (1) bacterial vaginosis, (2) vulvovaginal candidiasis, and (3) Trichomoniasis. Research in recent years has increased our understanding of the disease process and its potential sequelae and results in improved diagnostic and treatment modalities⁽¹⁻⁵⁾. Confirmation of aetiological diagnosis of abnormal vaginal discharge is important for specific and prompt treatment.

National AIDS control organisation (NACO) introduced syndromic approach to treat patients with abnormal vaginal

discharge^[6]. Many times it is confusing to differentiate between normal and abnormal vaginal discharge and therefore it is important to draw definite conclusion regarding pathological nature of vaginal discharge by performing vaginal pH test and Whiff test.

Bacterial vaginosis is reported to be one of the most common causes of abnormal vaginal discharge or vaginal symptoms in women of reproductive age^[7-12]. There are many non-infectious causes of vaginal discharge however it is the role of microbiology laboratory to determine the presence of recognised microbial pathogens and disturbances of normal flora. The importance of bacterial vaginosis is emphasized by its association with pelvic inflammatory diseases, adverse outcome of pregnancy in the postpartum period, endometritis and cuff cellulitis⁽¹³⁾. Bacterial vaginosis has also been associated with infections after hysterectomy, as well as low birth

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Received: 06.11.2015

Revised: 10.12.2015

Accepted: 21.01.2016

weight infants and pre-term births in affected women⁽¹⁴⁾. The complications arising out of bacterial vaginosis necessitate early diagnosis to institute prompt treatment of this polymicrobial syndrome. Bacterial vaginosis increases a woman's susceptibility to HIV infection⁽¹⁵⁾.

Bacterial vaginosis is diagnosed when three of four of Amsel's clinical criteria are present (i) abnormal, thin, homogeneous discharge (ii) vaginal pH >4.5 (iii) positive Whiff test, and (iv) presence of clue cells. Vaginal pH test and Whiff test which are the components of Amsel's clinical criteria if performed can help to draw definite conclusion so that proper therapy can be instituted without further delay.

Specificity and sensitivity of pH test and Whiff test varies from study to study when compared with Gram's stain vaginal smear scoring for morphotypes for diagnosis of bacterial vaginosis a major cause of abnormal vaginal discharge. Chijareenont et.al.^[10] reported that both vaginal pH and Whiff test has 100% sensitivity. Various studies have shown that in Trichomoniasis pH more than 4.5 and in candidiasis pH is less than 4.5^[11].

Considering the risk factors associated with abnormal vaginal discharge the present prospective study was carried out to evaluate utility of pH test and Whiff test in terms of sensitivity and specificity individually and in combination in diagnosis of abnormal vaginal discharge considering microscopy as a gold standard^[12].

MATERIAL AND METHODS

This prospective study was carried out in the tertiary care rural hospital of central India. Ethical clearance was obtained from institute's ethics committee. A total of 189 women of reproductive age group having abnormal vaginal discharge attending obstetrics and gynaecology outpatient department were included in the study. All such women were subjected to gynaecological examination. Vaginal speculum assisted vaginal swabs from lateral wall of vagina were collected for pH test and Whiff test. Vaginal pH was determined by dipping the pH paper strip of narrow range into the vaginal secretion and colour change compared with colour fixed indicator strip. Whiff test was done by adding few drops of 10% potassium hydroxide (KOH) on the secretion and fishy odour emitted due to liberation of aromatic amines was interpreted as positive test. Further vaginal fluid was subjected to microscopic examination for demonstration of motile trichomonads by wet mount and budding yeast cells and pseudomycelia by Gram's stain. Another slide of vaginal secretion fixed with ethanol was stained by Gram's method and was scored by using Nugent's criteria for diagnosis of bacterial vaginosis. Smears were screened by two observers separately to obviate observer's bias and graded according to Nugent's criteria.

RESULTS

A total of 189 women of reproductive age with symptomatic vaginal discharge were screened for vaginitis/vaginosis using pH and Whiff test. The pH ≥ 4.5 was found in 136 (71.95%) and Whiff test positive in 120 (63.49%) women. Both pH ≥ 4.5 and Whiff test positive was recorded in 118 (62.43%) cases. Laboratory testing of vaginal discharge by Gram's staining (Nugent's morphotypes criteria) as a gold standard revealed 86 (45.50%) patients suffering from bacterial vaginosis. Both pH ≥ 4.5 and Whiff test positive was recorded in 24 patients with trichomoniasis and negative in 71 cases of vulvovaginitis. Vaginal pH in diagnosing bacterial vaginosis was the most sensitive criterion, with the sensitivity of 97.05% and positive Whiff test was the most specific criterion with specificity of 47.57%.

DISCUSSION

Bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis are the most common causes of abnormal vaginal discharge in women of reproductive age that can be associated with significant morbidity and complications. The estimated prevalence of vaginitis ranged from approximately 28% to nearly 100% depending on the diagnostic strategy^[13]. In a study by Posner et.al.^[13], evaluation of pH plus Whiff test was better than syndromic management protocols and easiest to implement in resource-poor setting. Based on Gram's stain the gold standard, the prevalence of bacterial vaginosis was 45.50% in the present study.

Vaginal pH in bacterial vaginosis and trichomonas vaginalis infection is ≥ 4.5 and ≤ 4.5 in vulvovaginal candidiasis^[14]. Generally, diagnosis of trichomoniasis is made by visualising active trichomonads on microscopy, but this method has only 60% to 70% sensitivity. A culture has great sensitivity, but generally not used outside a research setting. Simple test i.e. pH ≥ 4.5 is 100% sensitive as observed in the present study.

In the presence of signs and symptoms suggesting possible genital tract infection laboratory evaluation for specific diagnosis is needed to avoid empiric treatment. The useful simple techniques used for diagnosing abnormal vaginal discharge includes pH testing, Whiff test, direct microscopy of vaginal secretions suspended in saline or potassium hydroxide (KOH), Gram's stained vaginal smear scoring for bacterial vaginosis. Clinical criteria for diagnosing bacterial vaginosis can be simplified to two clinical criteria without loss of sensitivity and specificity. Appropriate testing, including microscopy, should be performed as clinically indicated, to rule out other infectious aetiologies. In more complicated cases of recurrent or persistent bacterial vaginosis, a Gram stain should be considered to corroborate the diagnosis^[15].

Bacterial vaginosis is currently the most prevalent vaginal infection. In the present study 86 (45.50 %) patients were di-

agnosed to have bacterial vaginosis on the basis of Nugent's criteria. Twenty four and 71 patients were diagnosed to have trichomoniasis and VVC respectively. Demonstration of clue cells were the most reliable single indicator for bacterial vaginosis as reported ^[16] however, identification of clue cells requires on-site microscopy facility, a trained personnel and time.

In the present study, a total of 136 (71.95%) symptomatic women had vaginal pH \geq 4.5 and 120 (63.45%) women were Whiff test positive, suggesting abnormal vaginal discharge associated with vaginitis. Much higher results were reported by Neelam S and Sohail I ^[17]. As regard to sensitivity and specificity of pH test and Whiff test, it was found that both test showed 97.05% and 92.53% sensitivity and 47.57% and 56.31% specificity respectively. Similar finding have been reported by Hemlata et.al. ^[18].

CONCLUSION

There is a great need for an inexpensive diagnostic method that is reliable and unifies clinical and microbiological parameters to make it more sensitive while retaining the specificity. A diagnostic strategy that uses the pH test and Whiff test is most likely to be the best solution in resource poor settings because, although it is not the most sensitive and specific test, it offers a middle ground on sensitivity and specificity compared with technologically demanding Amsel's criteria. Thus pH and Whiff test can improve diagnostic value of speculum examination where microscope facilities are not available.

Conflict of interest: None.

Source of Funding: Nil

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

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